AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A thrust vector actuation control system for controlling one or more engine exhaust nozzles, comprising:

a controller configured to implement a control law and adapted to receive (i) data representative of actuation control system status, ~~and~~ (ii) one or more nozzle position commands from a flight computer, and (iii) data representative of updated control law variables, and configured (i) to transmit at least some of the actuation system status data to the flight computer ~~and~~, (ii) in response to the one or more nozzle position commands, to supply one or more nozzle actuator control signals, and (iii) upon receipt of updated control law variables, to modify the implemented control law to include the updated control law variables; and

one or more actuators adapted to receive the nozzle actuator control signals and configured, in response thereto, to move one or more engine exhaust nozzles to the commanded position.

2. (canceled).

3. (currently amended) The system of Claim [[2]] 1, further comprising:

one or more memory circuits in operable communication with the controller and configured to store the control law variables.

4. (original) The system of Claim 1, further comprising:

one or more position sensors adapted to supply position signals representative of rocket nozzle position.

5. (original) The system of Claim 4, wherein the controller is:

coupled to receive the position signals from the one or more position sensors; and

configured to supply the nozzle actuator control signals based at least in part on the position signals.

6. (original) The system of Claim 1, further comprising:

one or more pressure sensors adapted to supply pressure data representative of various system pressures;

one or more temperature sensors adapted to supply temperature data representative of various system temperatures; and

one or more fluid level sensors adapted to supply fluid level data representative of various system fluid levels,

wherein at least a portion of the data representative of actuation control system status includes the pressure data, the temperature data, and fluid level data.

7. (original) The system of Claim 1, wherein the nozzle actuator control signals supplied by the controller are digital signals, and wherein the system further comprises:

a digital-to-analog (D/A) conversion circuit coupled to receive the digital nozzle actuator control signals and operable, in response thereto, to supply analog nozzle actuator control signals to the one or more actuators.

8. (original) The system of Claim 7, wherein the analog actuator control signals supplied by the D/A conversion circuit are analog current signals.

9. (original) The system of Claim 8, wherein the D/A conversion circuit is:

adapted to receive actual actuator current signals representative of current flow magnitude through the one or more actuators; and

configured to supply the analog current signals based at least in part on the actual current signals.

10. (original) The system of Claim 1, further comprising:

one or more additional controllers,

wherein each controller is in operable communication with one another.

11. (original) A thrust vector actuation control system for controlling one or more engine exhaust nozzles, comprising:

a controller configured to implement a control law, the controller adapted to receive (i) data representative of updated control law variables and (ii) one or more nozzle position commands from a flight computer, and further configured (i) to modify the implemented control law to include the updated control law variables and (ii) in response to the nozzle position command, to supply one or more nozzle actuator control signals; and

one or more actuators adapted to receive the nozzle actuator control signals and configured, in response thereto, to move one or more engine exhaust nozzles to the commanded position.

12. (original) The system of Claim 11, further comprising:

one or more memory circuits in operable communication with the controller and configured to store the control law variables.

13. (original) The system of Claim 11, further comprising:

one or more position sensors adapted to supply position signals representative of rocket nozzle position.

14. (original) The system of Claim 13, wherein the controller is:

coupled to receive the position signals from the one or more position sensors; and

configured to supply the nozzle actuator control signals based at least in part on the position signals.

15. (original) The system of Claim 11, wherein:

the controller is further adapted to receive data representative of actuation control system status and configured, in response thereto, to transmit at least a portion of the actuation system status data to the flight computer.

16. (original) The system of Claim 15, further comprising:

one or more pressure sensors adapted to supply pressure data representative of various system pressures;

one or more temperature sensors adapted to supply temperature data representative of various system temperatures; and

one or more fluid level sensors adapted to supply fluid level data representative of various system fluid levels,

wherein at least a portion of the data representative of actuation control system status includes the pressure data, the temperature data, and fluid level data.

17. (original) The system of Claim 11, wherein the nozzle actuator control signals supplied by the controller are digital signals, and wherein the system further comprises:

a digital-to-analog (D/A) conversion circuit coupled to receive the digital nozzle actuator control signals and operable, in response thereto, to supply analog nozzle actuator control signals to the one or more actuators.

18. (original) The system of Claim 17, wherein the analog actuator control signals supplied by the D/A conversion circuit are analog current signals.

19. (original) The system of Claim 8, wherein the D/A conversion circuit is:

adapted to receive actual actuator current signals representative of current flow magnitude through the one or more actuators; and

configured to supply the analog current signals based at least in part on the actual current signals.

20. (currently amended) The system of Claim [[21]] 11, further comprising:

one or more additional controllers,

wherein each controller is in operable communication with one another.

21. (original) A propulsion vehicle, comprising:

an engine;

a movable exhaust nozzle in fluid communication with the engine to receive exhaust therefrom;

a flight computer adapted to receive (i) data representative of updated control law variables and (ii) vehicle attitude commands, the flight computer operable to (i) transmit the updated control law variables and (ii) in response to the vehicle attitude commands, to supply exhaust nozzle position commands;

a controller configured to implement a control law, the controller adapted to receive (i) the updated control law variables and (ii) the exhaust nozzle position commands and operable (i) to modify the implemented control law to include the updated control law variables and (ii) in response to the nozzle position command, to supply one or more nozzle actuator control signals; and

an actuator coupled to the engine exhaust nozzle, the actuator adapted to receive the nozzle actuator control signals and configured, in response thereto, to move the exhaust nozzle to the commanded position, to thereby move the vehicle to the commanded vehicle attitude.

22. (original) The propulsion vehicle of Claim 21, wherein:

the propulsion vehicle comprises a plurality of stages, each stage including the engine, the moveable exhaust nozzle, the controller, and the actuator; and

the controller in each stage is in operable communication with the controller in each of the other stages.

23. (original) A method of operating a thrust vector actuation system, comprising the steps of:

determining whether to operate the thrust vector actuation system in at least one of a control mode and a monitor mode;

providing at least writable access to one or more parameters of a control algorithm if it is determined that the system should operate in the monitor mode, whereby any of the one or more parameters may be updated; and

updating the control algorithm to include at least the parameters that were updated.